

WHAT IS CLAIMED IS:

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1. A module comprising:  
a semiconductor device;  
a phase adjustment circuit generating a  
second clock so that a phase adjustment signal  
output from the semiconductor device and a first  
clock have a predetermined phase relationship; and  
an output circuit that is provided in the  
semiconductor device and generates the phase  
adjustment signal from the second clock.

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2. The module as claimed in claim 1,  
wherein the semiconductor device comprises an output  
buffer from which data is output in synchronism with  
the second clock.

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3. A module comprising:  
semiconductor devices;  
a phase adjustment circuit generating a  
second clock so that a phase adjustment signal  
output from a first semiconductor device that is one  
of the semiconductor devices and a first clock have  
a predetermined phase relationship, the second clock  
being supplied to the semiconductor devices; and  
a wiring board on which the semiconductor  
devices and the phase adjustment circuit are mounted,  
the first semiconductor device including

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an ~~output~~ circuit generating the phase adjustment signal from the second clock.

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4. The module as claimed in claim 3,  
wherein each of the semiconductor devices comprises  
an output buffer from which data is output in  
10 synchronism with the second clock.

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wherein the module comprises first data lines over  
which data output from the semiconductor devices are  
transferred, and a second data line over which the  
phase adjustment signal output from the first  
20 semiconductor device is transferred,  
the first and second data lines being  
provided on the wiring board.

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6. The module as claimed in claim 4,  
wherein the module comprises first data lines over  
which data output from the semiconductor devices are  
30 transferred, and a second data line over which the  
phase adjustment signal output from the first  
semiconductor device is transferred,  
the first and second data lines being  
provided on the wiring board.

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# Case Study

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16. The module as claimed in claim 3,  
wherein the first semiconductor device generates the  
phase adjustment signal in accordance with a  
predetermined signal given from an outside of the  
first semiconductor device.

17. The module as claimed in claim 3,  
wherein:

the semiconductor devices including the  
first semiconductor device have an identical circuit  
configuration; and

the first semiconductor device has an  
output circuit that receives an external instruction  
that instructs the first semiconductor device to  
generate the phase adjustment signal.

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18. The module as claimed in claim 3,  
wherein the first clock is supplied from an outside  
of the module.

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19. The module as claimed in claim 3,  
further comprising a circuit generating the first  
clock from an external clock.

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20. The module as claimed in claim 3,  
wherein each of the semiconductor devices comprises  
a programmable delay circuit that delays the second  
clock.

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21. The module as claimed in claim 3,  
wherein the semiconductor devices comprise  
semiconductor memory devices.

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22. The module as claimed in claim 3, wherein the phase adjustment circuit generates the second clock from dummy output data output by the first semiconductor device.

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23. The module as claimed in claim 3, further comprising a second phase adjustment circuit generating a third clock so that the third clock and the first clock have a predetermined phase relationship, the third clock being supplied to the semiconductor devices.

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24. The module as claimed in claim 23, wherein the first clock corresponds to the third clock.

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25. A system comprising:  
modules;

a wiring board on which the modules are mounted; and

a dummy output load line serving as loads of dummy output data output from the modules.

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26. The system as claimed in claim 25, wherein the dummy output load line is provided in common to the modules.

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27. The system as claimed in claim 25, wherein the dummy output load line comprises parts respectively provided to the modules.

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28. The system as claimed in claim 25, wherein the modules comprises a module including:

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semiconductor devices;

a phase adjustment circuit generating a second clock so that a phase adjustment signal output from a first semiconductor device that is one of the semiconductor devices and a first clock have a predetermined phase relationship, the second clock being supplied to the semiconductor devices; and

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a wiring board on which the semiconductor devices and the phase adjustment circuit are mounted,

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the first semiconductor device including an output circuit generating the phase adjustment signal from the second clock.

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29. A semiconductor device comprising:

a first buffer receiving a first external clock and generating a first internal clock therefrom;

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a second buffer receiving a second external clock and generating a second internal clock therefrom;

an input buffer fetching input data in synchronism with the first internal clock;

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an output buffer from which data is output in synchronism with the second internal clock; and an output circuit outputting dummy output

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